

**NEC**<sup>®</sup>**S TO K-BAND  
GaAs VARACTOR DIODE****ND3000  
SERIES****FEATURES**

- **HIGH CUTOFF FREQUENCY:**  
 $f_c-6 = 250 \text{ GHz ND3048}$   
 $f_c-6 = 270 \text{ GHz ND3138(1)}$
- **HIGH RELIABILITY**
- **LOW COST**
- **WIDEBAND SELECTION: 2-15 GHz**
- **ULTRA HIGH CAPACITANCE RATIO:**  
 $C_{J0}/C_{J-25} \geq 15 \text{ ND3050}$

**APPLICATIONS**

- **TUNING**
- **MULTIPLIER CIRCUITS**
- **MODULATOR**

**COLOR MARKINGS**

Part Number	(A)	(B)
ND3048	YELLOW	RED
ND3049	YELLOW	BLUE
ND3050	YELLOW	BLACK
ND3138 (1)	GREEN	RED
ND3138 (2)	GREEN	BLUE

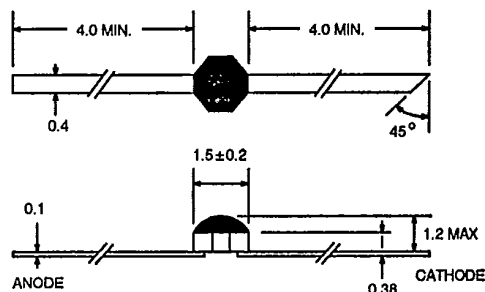
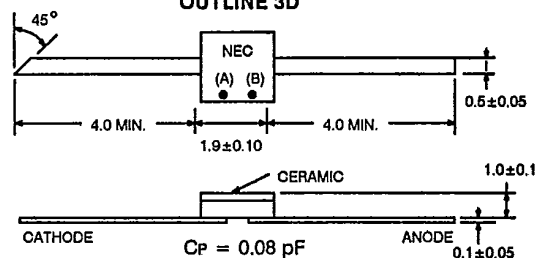
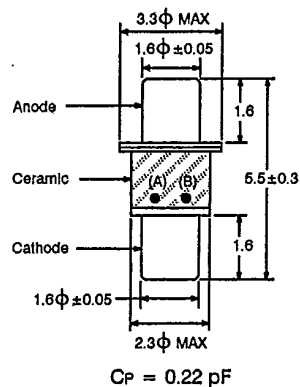
**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$ )

SYMBOLS	PARAMETERS	UNITS	RATINGS
$V_R$	Reverse Voltage	V	25
$I_F$	Forward Current	mA	10
$P_D$	Power Dissipation <sup>1</sup>	W	0.2
$P_D$	Power Dissipation <sup>2</sup>	W	0.5
$T_{STG}$	Storage Temperature	$^\circ\text{C}$	-65 to +175
$T_J$	Junction Temperature	$^\circ\text{C}$	175
$T_{SDR}$	Soldering Temperature <sup>3</sup>	$^\circ\text{C}$	230

1. ND3048, ND3049, ND3050

2. ND3138(1), ND3138(2)

3. Within 10 Seconds

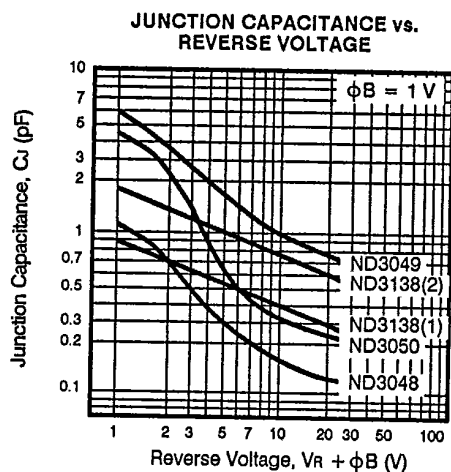
**OUTLINE DIMENSIONS** (Units in mm)**OUTLINE 3A****OUTLINE 3D****OUTLINE 5E**

# ELECTRICAL CHARACTERISTICS (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			ND3048 3A, 3D, 5E			ND3049 3A, 3D, 5E			ND3050 3A, 3D, 5E			ND3138(1) 3A, 3D, 5E			ND3138(2) 3A, 3D, 5E		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
VR	Reverse Voltage at IR = 10 µA	V	25			25			25			25			25		
IR	Reverse Current at VR = 23 V	ηA			100			100			100			100			100
VF	Forward Voltage at IF = 10 mA	V			1.4			1.4			1.4			1.4			1.4
CJO	Junction Capacitance at VR = 0, f = 1 MHz	pF	0.7	1.1	1.5	4	6	8				0.6	0.9	1.2	1.2	1.8	2.4
CJ-4	Junction Capacitance at VR = 4 V, f = 1 MHz	pF							0.45	0.60	0.75						
CJO/CJ-6	Capacitance Ratio at VR = 0, VR = 6 V, f = 1 MHz											1.8	2.2		1.8	2.2	
CJO/CJ-25	Capacitance Ratio at VR = 0, VR = 25 V, f = 1 MHz		5	8		5	8		15	20							
fc-s*	Cutoff Frequency at VR = 6 V, f = 20 GHz	GHz		250			80			220			270			170	
Q-6	VR = 6 V, f = 50 MHz			5000			1600			4400			5400			3400	

\*Harrison Method

## TYPICAL CHARACTERISTICS (TA = 25°C)



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Datasheets for electronic components.